EXAMINATION

8 November 2010 (am)

Subject F104 — Pension and Other Benefits Principles

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*

2. *You have 15 minutes at the start of the examination in which to read the questions.*
   You are strongly encouraged to use this time for reading only, but notes may be made.
   You then have three hours to complete the paper.

3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*

4. *Mark allocations are shown in brackets.*

5. *Attempt both questions, beginning your answer to each question on a separate sheet.*

6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, including any additional sheets firmly attached, and this question paper.

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.

Question 1

Defining all the terms you use, compare the following ways of financing retirement benefits with respect to stability of contribution rate, security and realism:

- pay-as-you-go
- terminal funding
- just-in-time

[Total 9]

Question 2

You are the statutory actuary appointed to the ABC Pension Fund. The fund is an open defined benefit fund with assets equal to approximately 130% of liabilities, valued on a best estimate basis. The fund has equal monetary liabilities in respect of active members and pensioners, with pensions being paid from the fund.

According to the Investment policy of the fund, the proportion of the fund's assets to be invested in different asset classes should target the following ranges:

Equities	70 – 80%
Fixed-Interest securities	10 - 20%
Cash	0 – 5%
Foreign equities	0 – 15%

For a number of years, the fund sponsor has been concerned about the future uncertainty of contribution rates.

(i) Outline the factors that contribute to the uncertainty of contributions required from the sponsor.

[4]

As a result of this uncertainty, the sponsor and the trustees have told you that the intention is to convert the fund to a defined contribution arrangement. You have been asked for your advice in making appropriate changes to the current investment policy.

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ii) Outline the main investment related issues that the sponsor and trustees should consider when making the change to a defined contribution fund. You should include your recommendation for a revised set of the ranges set out above.

[8]

[Total 12]

Question 3

You have been approached by the Minister of Finance of a developing country that wishes to introduce a state-provided retirement benefits system. The intention is for this to be a partially or fully funded arrangement.

Before deciding on the exact benefits to be provided, the Minister has asked that you explain the following:

i) options available to finance such a system [6]
ii) how to project the income and expenditure the system will generate, including formulae where necessary [10]
iii) what important assumptions need to be made in the projections or valuations of the benefits provided [4]

The Minister has also asked you to list any important practical considerations you think should be taken into account in the implementation of the new system.

iv) What are the practical considerations that you consider to be most important? [3]

[Total 23]

Question 4

i) Name the options available for the provision of outstanding benefit payments on discontinuance of a benefit scheme. [3]

ii) A fund is being discontinued. It has pensions paid from the fund, and the trustees are considering purchasing immediate annuities to extinguish the fund's liabilities to these pensioners when the fund is discontinued. Outline what the trustees need to consider when making this decision. [4]

[Total 7]

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Question 5

Company A has recently completed the buyout of a much smaller competitor, Company X. The employees of both companies belong to company-sponsored defined benefit funds, offering benefits on retirement only. Membership of Fund A is compulsory for all employees of Company A and membership of Fund X is voluntary for employees of Company X. The intention is to equalise all benefits of Company A and Company X, and to ultimately close down Fund X.

What should the sponsor, actuary and trustees of Fund A consider in the process of equalising the retirement benefits and transferring the members of Fund X into Fund A?

[Total 12]

Question 6

The HR manager of a large retailer has approached you for assistance in establishing a retirement fund for employees of the company. She has asked for you assistance in the following two areas in particular:

i) What are the major factors she needs to consider in choosing between a defined contribution and a defined benefit arrangement? [10]
ii) What does it mean to ensure consistency in the benefit design? Name two benefits in particular that could this apply to? [3]

[Total 13]

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Question 7

You are conducting the valuation of the CD Pension Fund, a small open defined benefit fund. The valuation is at 31 January 2010. You intend to use the attained age method of funding, which is what was used at the previous valuation at 31 January 2007.

The valuation at 31 January 2007 revealed the following:

	R
Market value of assets	7 840 000
Present value of benefits for pensioners:	1 375 000
Present value of past service benefits for all in service members allowing for future salary increases:	4 597 129
Present value of benefits accruing for all members in the 3 years after the valuation date allowing for future salary increases:	1 647 380
Present value of all future service benefits accruing for all members for service to the normal retirement age of 65 allowing for future salary increases:	7 237 300
Present value of salaries for all members in the 3 years after the valuation date, allowing for salary increases:	5 740 000
Present value of all future salaries for all members, allowing for salary increases:	21 100 000

Benefits accrue at the rate of 2% of final salary for each year of service.

The following assumptions were used to derive the above results:

Discount rate	9.00%
Pension increases	4.50%
Salary increases	7.00%
Consumer Price inflation	6.00%

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Further valuation results from the previous valuation are:

Average age of active members 48

Average age of pensioners 68

a_{65} = 14.681

a_{68} = 12.354

a_{71} = 9.721

Pensionable salaries for active members for the period 31 January 2007 to 1 February 2008 were R1 950 000.

No allowance was made for pre-retirement decrements – that is, it was assumed that there would be no exits from the fund, other than by retirement, and no allowance was made for new entrants. Members do not contribute to the fund. Contributions by the employer are due and paid in advance as at 31 January each year. Expenses of the fund are equal to 10% of contributions and are paid automatically when contributions are paid.

Your investigations to date have revealed that all assumptions have been borne out in practice, with the exception of the following:

1. The employer has been contributing at a rate equal to the projected unit standard contribution rate, with a 3-year control period.
2. Actual investment returns for the period 1 February 2007 to 31 January 2010 have averaged 8.21%.
3. Actual pension increases have been 2.30% per annum for the 3 year period.

i.) Calculate the surplus you would expect as at 31 January 2010 if actual experience had been exactly as assumed. [8]

ii.) Calculate the actual surplus as at 31 January 2010. [5]

iii.) Explain the sources of the differences between your answers in i) and ii). [7]

iv.) The Chairman of the Board of Trustees has asked you to explain why you are using the attained aged method of funding, when this is causing an increase in the cost of the benefits provided. [4]

[Total 24]

END OF PAPER

